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# Railroads in the Territories. (To accompany bill H.R. no. 390.).

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# RAILROADS IN THE TERRITORIES.

[To accompany bill H. R. No. 390.]

August 6, 1856.

Mr. Thorington, from the Committee on Public Lands, made the following

## REPORT.

In every quarter of our widely-extended Union the opinion is expressed that a great highway of iron from the valley of the Mississippi river to our settlements on the Pacific is imperatively demanded, and the aid of the general government is now invoked, by way of donation of public lands, in the construction of the same; and the prominent parties of the day have given in their adherence to the project. The roads contemplated in this bill, and the several branches connecting therewith, are, if the expression may be used, but the termini or roots of this great trunk road, setting out from the Mississippi, connected, cemented, and tied together at some point on the Platte river, in Nebraska Territory. This point and the lines and continuations of the roads are left, for obvious reasons, to be determined by the several legislatures of the Territories through which and in which the roads are located, and the points referred to are also undetermined. If a point of termini, terminus, or junction of any road shall be fixed by a bill for railroads, the scheming speculator seizes at once upon such locations, the energies of the road are thereafter crippled, settlers charged exorbitant prices for homes, and the real object of munificent grants retarded by speculators. The charge that railroad companies are likely to become dangerous monopolies is not borne out by facts in this country, and probably never will; and if *one case* can be cited in the United States, it will probably be found where an exclusive privilege exists between great commercial points. Railroads are not profitable to the stockholders. Money invested in them does not pay as good interest as in other business transactions; therefore the danger to be apprehended that they will become powerful political machines does not and cannot exist in the United States. If it were necessary, it could be shown by argument that railroads have a different tendency. It should be the interest of our government to foster and encourage the building of them; and the true patriot and statesman should lend his energies and abilities to favor their construction. It diffuses the masses; sends them by cheap and easy locomotion to the extremes of

our country; depletes our own crowded cities of its surplus population; places man, with his corporal and mental energies, upon the virgin soil of the great West, thereby developing a country that has lain hid for untold ages from the knowledge of the civilized world, and mineral wealth of untold millions scattered profusely over the face of that comparatively unexplored country—the great West.

The object of this bill being for no other purpose than to connect with this great iron belt that is to extend from ocean to ocean, it will not be out of place here to speak in general terms of one of the many routes proposed through the Rocky mountains from the Mississippi river.

In projecting a trace for the proposed great avenue, regard should be had to the geographical line that may be selected; and great care should be observed to have the road constructed on a scale worthy of the magnitude and resources of the republic, and the enterprise, industry, power, and wants of our people. Several available routes for the proposed great highway have been submitted to the public: we refer to the Platte valley route, the Kansas valley route, &c. The extreme northern route, commencing at St. Anthony's Falls, on the Upper Mississippi, latitude 45° north, we regard as utterly impracticable. Our inclination and judgment oblige us to favor and advocate the contemplated roads that concentrate in the Platte valley, latitude 41° north, as the most eligible trace for the Pacific railroad, and for the following reasons: A vast majority of the population of our republic reside between the parallels of 38° and 44° north latitude; and within the limits mentioned, extending westward from the Atlantic ocean to 102° west longitude, is embraced much the larger portion of the granary of the Union; and aside from its great agricultural wealth, its mineral resources are of incalculable value. The region we have described is assuredly capable of furnishing subsistence to eighty millions of human beings—a population nearly equal to that of Great Britain, France, and of the United States at this present time—now, comparatively speaking, a wild waste and wilderness, inhabited by savages and wild beasts.

As this portion of our country, owing to the fertility of its soil and inexhaustible mineral wealth, is destined to support an immense population, interest as well as propriety would suggest that the trace of the Pacific railroad should be selected as nearly central as practicable to the region mentioned. A casual examination of the various charts exhibiting the numerous railroads now in use or being constructed in the New England States, New York, Pennsylvania, Maryland, Ohio, Michigan, Indiana, and Wisconsin, will show a direct connexion with other iron highways leading to the crossing on Lake Michigan at Mackinaw and to the south bend of said lake. From this southern bend, latitude 41° 37′ north, the chain has been constructed through Illinois to Rock island, connecting, by a railroad bridge, with the Mississippi and Missouri railroad, and continued on from Davenport to Iowa City, the present seat of government of the State of Iowa, with a connexion with Muscatine by railroad westward of Iowa City, (and of Muscatine by Oskaloosa and Fort Des Moines, the future

capital of Iowa;) the railroads are being completed rapidly to Council Bluffs, on the Missouri river.

This bill proposes a connexion with the Mississippi river at Keokuk, the head of navigation (if we may be allowed the expression) in the winter season, owing to the closing of that river above that point with ice, but which occurs but a short period below Keokuk in any winter, thus affording a commercial connexion nearly the year round with St. Louis and New Orleans, enabling the settlers to choose in these far distant territories between the Mississippi and the Missouri rivers, thereby furnishing them competition, and enabling them to purchase their groceries at the most reasonable rates, and to avail themselves of high water in one or the other of those streams; as it is a notable fact that they rarely experience high and low water in these two rivers at the same season of the year in any one period. This bill proposes to connect the terminus of the four roads provided for, by grant in Iowa, by this Congress, and to continue the line of these several roads to points that may be designated by act of the Territorial legislature of Nebraska, and thence to some point at or east of Fort Kearney, on the Platte river. To enable the inhabitants of Kansas, and her future population, to avail themselves of an eastern and southern market, the roads provided for in this bill fully meet that object, and also connect them with the proposed Pacific railroad. Another road provided for in this bill needs little more than a passing notice. The road commencing at or near McGregor's landing, on the Mississippi, will be an important link in the great northern route, and we believe the most northern route through this great belt we have mentioned. Steamers cross Lake Michigan in forty and sixty minutes, connecting at Mackinaw, where a railroad is now finished from that point to Chicago and Madison—the first the great central city of America, the latter the capital of Wisconsin. From this latter point a road is projected and now being built to Prairie du Chien, on the Mississippi river, opposite McGregor's landing. This route continued due west intersects the Pacific railroad route at the "South pass" at the foot of "Wind River mountains." The branches passing from Mankato, *via* Fort Dodge, to the Mississippi and Missouri railroad, is designed to open up a country rich in mineral and abounding in coal-fields, gypsum, &c., which we shall refer to hereafter more at length. The road from McGregor's landing north enables the inhabitants of Minnesota to form an eastern connection. The road to Mankato, and thence south into Iowa, enables them to avail themselves of the coal-fields referred to, and gives them an additional outlet by Rock island to an eastern and southern market. The road provided for from Nebraska City, to connect with the Mississippi and Missouri river railroad, enables the inhabitants of Kansas to avail themselves of an eastern market also by Burlington and Rock island. At Fort Kearney, or some point west on the Platte river, we would most respectfully suggest for the commencement of the Pacific railroad; thence following the valley of Platte river westward to Bridger's pass in the Rocky mountains—latitude 41½° north, longitude 108° west. The distance from Council Bluffs to the pass is about 750 miles. The elevation of the Missouri

river at Council Bluffs is 1,034 feet above the Atlantic ocean, and the summit of the pass in the mountains is 7,500 feet above the ocean. Respecting the topography or face of the country, over which we propose to locate the trace of the Pacific railroad, from the Missouri river to Bridger's pass, we need only remark that the entire region is an immense plain, and therefore the grades will prove extremely moderate, averaging (in our judgment) less than ten feet per mile. The distance from Chicago by way of Rock Island, Davenport, Council Bluffs, and the line of the proposed Pacific railroad, to Bridger's pass, will reach one thousand two hundred miles, and on the entire trace the line would deflect more than thirty miles from a due west course, and the line of the route by way of McGregor's landing near a right line. Westward of the pass the trace of the proposed road would follow the valley of Bitter creek to the Colorado river, and cross that river at an elevation of 6,000 feet above the Pacific. The distance from Bridger's pass to the Colorado is one hundred and forty miles, and the descent will average about ten feet to the mile. After crossing to the right bank the trace would follow up the valley of Black Fork to Fort Bridger, a distance of fifty miles, and on this portion of the route also the grade would present no impediment. Fort Bridger is in latitude 41° 18′ north, 110½° west longitude, beyond which point the trace would follow the line recommended by Captain Stansbury, *via* Bear river, Weber river, Camass Prairie, and Timpanogos river, to Utah lake, in the Great Basin, latitude 40° north, 112° west longitude.

Captain Stansbury carefully traversed the trace mentioned from Bridger's pass to the right bank of Timpanogos river, and of its feasibility for the route of a railroad he speaks with great confidence. From Utah lake, a southern route to San Francisco is entirely feasible, by following the western base of the Wahsatch mountains, passing through the several Mormon settlements to latitude 35½ north, 114 west longitude, thence cross the lower section of the basin to Walker's pass in the Sierra Nevada, and thence northwardly down the valleys of Tulare and San Joaquin rivers. From Bridger's pass in the Rocky mountains to the valley of Bear river in the Wahsatch chain, a distance of 250 miles, *bituminous coal abounds*. It is found in *veins* cropping to the surface, and varying from four to twelve feet in thickness. Owing to the great scarcity of timber between the Missouri river and the Sierra Nevada, a railroad to the western ocean would (in our judgment) prove utterly unavailable, unless coal could be obtained to drive the motive power, and we feel confident that coal will be found in greater abundance in the Platte valley route than upon the Kansas or southern route. Much of the country lying between the Missouri river and the Pacific ocean is sterile and irreclaimable. Probably for eight hundred miles of the entire distance, the country will be found wholly unproductive; and, therefore, any attempt to carry a railroad from the valley of the Mississippi to San Francisco, without obtaining at convenient distances a sufficient supply of *coal* to drive the motive power, would assuredly fail.

We are unacquainted with any trace within the territorial limits of the Union, where coal could be safely dispensed with in the success-

ful use of a railroad to the Pacific ocean. Without an abundant supply of this important fuel, the design of constructing an iron highway to our settlements in California and Oregon should be wholly abandoned. To obviate the seeming lack of fuel along this expansive region of country, both for motive power and domestic uses by the inhabitants along these routes, and supply the future wants of this great nation, that is fast filling up this country west of the Mississippi and Missouri rivers, as well as north of the proposed routes in this bill, we propose to turn to an authentic document, one put forth by a scientific gentleman, and by authority of Congress. As this subject has received much attention from a reliable author, one who has devoted much time and attention to the subject, we take the liberty of here inserting a chapter from a work lately put out by this gentleman, as being the most reliable upon the subject of the coal-fields in this region; as also, the minerals abounding within the range of the principal route mentioned in this bill. We refer to a work entitled "Iowa as it is," by N. H. Parker, esq., of Clinton, Clinton county, Iowa. Chapter viii, commencing on page 37, is as follows:

In preparing the following, we depend principally upon "Owen's Geological Report" of a survey, made under his direction, of the Northwest Territory, by authority of Congress.

### Minerals.

The principal minerals of Iowa are lead, iron and copper. The shipment of lead from Dubuque, from the 21st of March to the 1st of December, 1854, inclusive, amounted to 43,543 pigs, weighing 3,069,640 lbs.; value at the mines, $178,830 20. Lead has been found at various other places near the base of a bluff on the west side of the Mississippi, some ten or fifteen miles above Turkey river, near the French village. From seven to ten thousand pounds of lead ore were taken from openings in the rocks by Dr. Andrus. More or less "galena" is found here in all the principal openings, for the distance of a mile. Between the Yellow and Upper Iowa rivers, excavations are visible where the Indians have dug for lead ore. On the Upper Iowa, also, ore has been discovered in several places in considerable quantities. In the Winnebago Reserve, not far from the Iowa river, and a few miles northwest of the town of Lansing, lead ore has been found in small quantities, chiefly in pockets and cavities.

Copper ore has been discovered within the boundaries of the State, but not sufficiently productive to justify the sinking of shafts. Iron ore is found in various places in the Des Moines valley; Owen thought, in some locations, of sufficient productiveness to justify smelting. There are as yet no works for working raw iron ore in the State.

### Coal-fields of Iowa.

Last summer the following article appeared in the Des Moines Valley Whig. Having compared it with other authority, we find it quite correct, and insert it entire, with additional data gathered elsewhere, as a condensed view of Iowa coal measures, &c.

The Des Moines river runs centrally and diagonally through what is geologically called the carboniferous system of Iowa. This system is called carboniferous because it is that particular division of rocks in which the coal measures are found, and because it contains that series of rocks of a comparatively modern date, which in their composition are so largely carbon.

The physical and pastoral features of the Des Moines valley are thus given in Owen's Geological Survey: "The carboniferous rocks of Iowa occupy a region of country which, taken as a whole, is one of the most fertile in the United States. No country can present to the farmer greater facilities for subduing in a short time wild land.

"For centuries, the succession of natural crops of grass, untouched by the scythe, and but very partially kept down by the pasturage of buffalo, and other herbiverous animals, have accumulated organic matter on the surface soil to such an extent, that a large succession even of exhausting crops will not materially impoverish the land.

"The rural beauty of this portion of Iowa can hardly be surpassed. Undulating prairies, interspersed with open groves of timber, and watered by pebbly or rocky bedded streams, pure and transparent; hills of moderate height and gentle slope; here and there, especially towards the heads of the steams, small lakes, as clear as the rivers—some skirted with timber, some with banks formed by the greensward of the open prairie; these are the ordinary features of the pastoral landscape."

The principal minerals to be noticed in this paper are coal, hydraulic limestone, quartzite, clays, common or mountain limestone, marble, iron-ore, and gypsum.

## Coal.

The Iowa coal-field embraces an area of about 25,000 square miles. A very good idea of its locality may be obtained by taking a map and drawing a line, commencing near the southwest corner of the State, proceeding up the Nishnabotna; thence to Lake Boyer; thence, by the heads of the Three Rivers, northeast to the Des Moines, crossing it six miles above Fort Dodge; thence southeast through Tama and Iowa counties to the east part of Washington county; thence nearly south, through the west part of Henry and Lee counties, to the Des Moines river, near St. Francisville. It is nearly in the shape of a half ellipse cut by the shortest diameter. The width of it, east and west, is nearly 200 miles; while in a north and south direction the distance is 140 miles. The Des Moines river traverses in a southeast direction about 250 miles.

The accompanying table has with much care and some labor been compiled from Owen's Report, for the purpose of giving a view of the thickness of the coal veins as they show themselves in the valley proper, and in the banks of creeks near by.

*Tabular view of the coal-beds in the Des Moines Valley.*

| Counties. | Range. | | Section. | Veins. | | General remarks. |
|---|---|---|---|---|---|---|
| | *North.* | *West.* | | *Feet.* | *Inches.* | |
| Lee | 66 | 9 | 23 | 1 | ------ | Quality poor. |
| Clark, Mo | 67 | 8 | 36 | 3 | ------ | Quality good. |
| Van Buren | 68 | 8 | 24 | 4 | 6 | Night's bank, good. |
| Do | 68 | 8 | 34 | 4 | ------ | Regular, 4 to 5 feet. |
| Do | 68 | 8 | 25–26 | 2 | ------ | Slaughter's bank. |
| Do | 69 | 8 & 9 | 32 | 2 | ------ | On Bear Creek. |
| Do | 69 | 9 | 25 | 1 | 6 | Gillis's bank. |
| Do | 70 | 11 | 3 | 4 | ------ | Near Portland. |
| Davis | 70 | 12 | 22 | 2 | ------ | 2 seams 2 feet each. |
| Wapello | 72 | 13 | -------- | 3 | ------ | 5 feet higher, 18 inches. |
| Do | 73 | 15 | 20 | ------ | ------ | Not given. |
| Mahaska | 74 | 15 | 19–30 | 4 | ------ | Quality tolerable. |
| Do | 74 | 17 | 6 | 3 | ------ | |
| Do | 74 | 17 | 32 | 2 | 6 | |
| Marion | 74 | 18 | 2 | 2 | ------ | Right bank Cedar. |
| Do | 74 | 18 | 12 | 3 | ------ | |
| Do | 74 | 18 | 16 | 5 | ------ | |
| Do | 74 | 18 | 30 | ------ | ------ | Regular, 4 to 6 feet. |
| Do | 74 | 18 | 14 | 2 | ------ | 2½ feet, poor. |
| Do | 75 | 20 | 3 | 3 | ------ | White, Breach, &c. |
| Do | 76 | 19 | 14–23 | 4 | ------ | Do. |
| Do | 76 | 19 | 11 | ------ | ------ | Not given. |
| Polk | 78 | 23 | 23 | ------ | ------ | Do. |
| Do | 78 | 24 | 4 | 2 | ------ | Regular, 2 to 3 feet. |
| Boone | 81 | 25 | -------- | ------ | ------ | 2 to 3 feet, inferior. |
| Do | 83 | 26 | 5 | ------ | ------ | Not given. |

NOTE.—Last bed mentioned in latitude 42° 30′ north.

The foregoing table does not include the thinnest veins, nor half the localities where the thick ones crop out; but one can get a very correct view of the thickness of the best seams up along the valley. There are undoubtedly outcrops where the thickness is much greater than in any of the places mentioned; but these will be found to be the centre or side of a basin which, on being worked, will not extend far. A basin of fifteen feet in thickness has been found in a bank opposite Farmington. Where the outcrops are more than four or five feet, they must be suspected as being basins, unless in the cut of a stream at some distance the vein is ascertained to have the same thickness. Owen says there is no vein of more than from four to five feet in Iowa. (Report, p. 20.)

The table shows outcrops are far more numerous in some localities than in others. In the immediate vicinity of the river, where the coal sandstones, which lie below the coal, make their appearance, the coal strata are usually wanting. This is the case at Bonaparte, Bentonsport, Keosauqua, and Ottumwa. But in these the coal strata may be and actually are found in creeks at no great distance from the river, sometimes even upon the bluffs.

The southeast and northwest parts of Van Buren county, the northeast part of Davis, the central part of Wapello, the southern

part of Mahaska, and the southeastern and central parts of Marion, are rich in coal.

But other portions of the same counties are not wanting. So far as can be learned from the table, and so far as the observation and knowledge of the writer extends, the heaviest beds are usually on the west side of the river. The best beds are also there. Some of these are in the White, Breach, Cedar, and Soap creeks. The principal exception to this rule is in the southeast part of Van Buren county. Here it exists in great abundance on both sides of the river. It is equal in quality to any found below Marion county. Two veins are worked to considerable extent in connection; the two afford from $4\frac{1}{2}$ to $5\frac{1}{2}$ feet. On the west side of the river, it is said, the two are separated by a vein of fire-clay, which thins out, and the coal veins converge as they recede from the river. These veins are shown in the cuts made by the creeks for miles in distance to the west. During the year ending with the current June, more than 100,000 bushels have been taken from these banks near Farmington, two of which are east of the river. Some of this has been conveyed by blacksmiths the distance of 75 miles, into the State of Missouri. The greater part of it has been transported to different places by wagons.

The average value of it at the bank is $6\frac{1}{4}$ cents per bushel. The value at the Mississippi, a distance of 80 miles, is 18 to 20 cents per bushel. Whenever the banks shall be well opened, and there are ready and convenient means of carriage, so that colliers can find regular employment, coal can be delivered on the banks of the Mississippi at a cost of 6 or 7 cents per bushel, and afford a better profit than at present. This is upon the supposition that it can be conveyed upon a railroad car as cheap here as in Kentucky, where the cost of transportation is one cent per bushel for 100 miles. And as to the amount of coal the valley can supply, it is easy to ascertain it. Allowing a bushel to the cubic foot, one acre, with a two-feet vein, will give 87,120 bushels. With a four-feet vein, one acre will give 174,240 bushels. One hundred acres, with a four-feet vein, will yield 17,424,000 bushels. One square mile, with a four-feet vein, will yield 111,513,600 bushels. The transportation of this 100 miles, at one cent per bushel, would yield the snug purse of $1,115,136; and as the demand for coal would at once be increased to millions of bushels a year, if a railroad was constructed in the valley, this mineral alone would afford quite an item of business and profit.

### Hydraulic Limestone.

Of this kind of stone is formed a mortar which will set under water. It is essential to all masonry exposed to water and to dampness. There are several varieties of it—one is called Septoria. This is found in the form of round or flattened balls of various sizes. This is the kind from which the English prepare the celebrated Roman cement. (*Hitchcock's Geology, p.* 20.) Comstock speaks of it also as "Argillo-Ferruginous Limestone." This, however, is another variety of cement-rock, and is perhaps the most common. It is called black calcareous rock, cement rock, and hydraulic limestone. In reference

to the geological formations in the valley Owen says: "The middle divisions of the Iowa coal-field affords, at many localities, iron stones of various qualities, associated frequently with hydraulic calcareous cement, which occurs either in the form of disconnected septoria, or regular beds." (Report, p. 21.)

Cement rock is found both above and below the coal, but in the largest quantities above. The subscriber will find mention of it by consulting Owen's Report, pp. 112, 127; and more frequently still in that part of it which gives the geological structure between Fort Desmoines and Fort Dodge. It is a very common rock in the valley; probably in any county on the river below Fort Dodge. In many places contiguous to the river in Davis county, there are strata of it several feet in thickness. The geological structure of the southeast and central parts of Marion county are just the same as in Davis; but as the series of rocks *above* the coal show themselves more extensively above Raccoon fork, we accordingly find more frequent mention of it in that region. In some places large quantities of it are wrought into cement, which is quite extensively used in the river improvement. The initials of it, by analysis, are:

| | |
|---|---|
| Carbonate of lime | 63.6 |
| Silica | 15.5 |
| Alumina | 8.3 |
| Protoxide of iron | 7.4 |
| Magnesia | 1.2 |

With a small portion of manganese, soda, and potash.

It will readily be seen that the demand for this is great, when it is said that $6,000 worth, at the ordinary prices, will be wanted for every lock on the river; and when it is also said, that in nearly every dwelling in the western country, cisterns coated with this cement will be indispensable as a means of obtaining a supply of pure soft water. The walls and floors of damp cellars must also be laid in cement. And the cement of this valley will be wanted because it is more accessible—the present demand being supplied, in a great measure, from La Salle, Illinois, and from Louisville, Kentucky; and, also, because the valley cement is probably fully equal to that from other places. That the reader may see how its constituents compare with other cement, we will give the analysis of that which is extensively used in the State of New York. Its commposition, according to Professor Beck, is:

| | |
|---|---|
| Carbonate of lime | 50.70 |
| Silica | 15.37 |
| Alumina | 9.13 |
| Peroxide of iron | 2.25 |
| Magnesia | 12.35 |
| Tartar emetic | 34.13 |

Comparing this analysis with that of the valley cement, it will be seen that they are substantially the same. We will here add a practical remark, which may be of much value to those who undertake to manufacture this cement, and to those who undertake to testify as

to the specimens. Very much depends upon burning it with fire. If care be not taken, the best cement may be easily spoiled. In St. John's Geology, p. 274, will be found the following:

"Greater caution is requisite in burning hydraulic lime, since it is fusible, and the heat applied to the common lime will vitrify this substance, and render the process quite imperfect. Common lime will bear a white heat; but the calcination of hydraulic lime is not well effected above a red heat."

When proper arrangements shall be made for working this limestone, it is said the cement can be afforded at the kiln for $1 25 per barrel. The carriage of it to the Mississippi by land is, at most, one dollar per barrel per 100 miles; while cement from other places costs from $3 to $3 50 per barrel.

### Common Limestone.

Though this is regarded as prevailing rock in the west, there are large sections in Iowa where the limestone is so largely magnetic as to be unfit for quick-lime and mortar. The proper position of the common or mountain limestone, in the carboniferous system, is below the coal. Accordingly, it is found all along the valley in the greatest abundance and of the best quality. Much of it contains ninety per cent. of carbonate of lime. This is among the most valuable of stones for quick-lime.

Closely allied to this stone, and still lower in the system, is the blue limestone. Some of this is deep blue, and some of a bluish gray. It is harder than common limestone, often highly crystalline and fossiliferous. It usually lies in strata in the valley, varying from a few inches to some feet in thickness. The stone is good for quick-lime, but is of superior quality for building material. It is as beautiful and durable as Quincy granite, while the cost of putting it into the wall is comparatively trifling. The principal places where it is accessible are Keokuk, in the bed of the river below Farmington, Keosauqua, and Ottumwa. It will undoubtedly become an article of export as soon as it shall become known, when a demand for the best building material arises, and the best means of transportation are provided.

### Marble.

The writer claims that there is marble in the Des Moines valley of good quality and in great quantity. Any limestone which is sufficiently hard to take a fine polish is called marble. Many of these are fossiliferous. (Lyell's Elements of Geology, p. 12.) In the limestones beneath the coal there are several qualities which come under this definition. Among them may be classed some of those named under the previous head. The best quarry now known in the valley is at Keokuk. Some of the strata there are crystalline—almost ossinine—and take fine polish. St. Louis has already resorted to this place for building material; a fact which shows that this marble is superior to any other equally accessible to that city. At the same locality are other varieties which polish well. They are crystalline,

solid, but full of fossils, and either blue or of a bluish-gray color. Of the latter varieties enough can be had at Bonaparte, Bentonsport, and Keosauqua; and, very probably, when these quarries shall be extensively worked, the white marble will be found.

Not far from Keosauqua there is a good variety of light gray, compact, granular marble, of which tomb-stones are wrought by Deacon M. B. Root. It effervesces slightly with acids, and takes a polish. Iowa sent a block from this quarry to the Washington monument. Ottumwa may expect to find as good varieties of marble as any place, because the lower limestones have the greatest uplift there.

### Quartzite.

On Reed's creek, some distance from its mouth, not far from the line between the counties of Lee and Van Buren, are heavy beds of quartzite. The color of it is nearly white, sometimes a light blue, and it is so slightly adhesive that it can easily be shaved off with a spade. Plasterers, when working in the neighborhood, are accustomed to obtain it for their finishing coat. Those of them who have used this and also that obtained at the Falls of St. Anthony, say that the two kinds are just alike. Examined with a magnifier, the sandstone on Reed's creek is sharply angular, and appears to be very pure quartz. The slight coloring it has received has probably been obtained from the superincumbent earth. For plastering purposes, it cements as well with lime as that of the falls; and if it really be like it, these beds are a source whence can be obtained the best material for the manufacture of crystal glass.

### Clays.

Passing by the kinds from which common brick are made, and those used for earthen and stone ware, the coal measures abound in fire-clay. Fire-proof bricks are wrought of this for the use of foundries, furnaces, and in all cases and places where there is an exposure to intense heat. In the eastern States it has sometimes been necessary to import these bricks from England. The cost of them has been as high as fifty dollars per thousand. It is desirable that fireplaces and ovens should be constructed of them; and where fire-clay is plenty, as in the valley, there is no reason why they should not be. But bricks are heavy articles of transport, and until there are railroad facilities of carriage, that one item of cost will prevent extensive business in this kind of manufacture. With such facilities there appears no good reason why this clay should not be worked. And as to quantity, the valley can supply the United States, with Cuba and Mexico annexed.

### Iron Ore.

Iron has been found in several places, though no beds are known in the valley of so rich a character as those of the Iron mountain, in Missouri. Owen found this ore in Marion county, in beds which he

considered would hereafter be worked. Specimens taken from them and examined had a specific gravity of 3.45; that of pure iron being 7.7. By analysis they contained 35 per cent. of iron. This iron, as to richness and quality, is almost exactly like the Cairnhill black band of Scotland, which is extensively worked. Other and heavier beds have been discovered since Owen's survey, but whether rich or not is not certainly known—the ore not having been tested by competent men. In such circumstances it is not possible to speak of this one with great definiteness.

### Gypsum, or Plaster of Paris.

This is chemically known as the sulphate of lime. The heaviest beds of it in the United States are to be found a few miles below Lizard Fork, in Yell county. They are from 20 to 30 feet thick, and show themselves on both sides of the river for miles; and they extend back each way an unknown distance. By analysis, this gypsum contains 70.8 per cent. of sulphate of lime.

On one acre, with an average thickness of 20 feet, there will be 871,200 cubic feet; on one square mile, 557,568,000 cubic feet; and on three miles square, 5,018,112,000 cubic feet, and 308,031,428 tons.

Before closing this paper on the minerals of the valley, it is proper to say that the survey of Dr. Owen was made by order of the United States, and had for its more special object the discovery of mineral lands, such as the government might wish to reserve. The principal minerals sought were lead and copper. The coal-field was surveyed and mapped down, while the other minerals noticed in this paper received only incidental attention and secondary consideration—some of them, no mention at all. Could there be a thorough geological survey by the authority of our own State, it is probable that valuable discoveries would be made in the Des Moines valley, as well as in other parts of the State. (See note at the end.) The multitude of streams which debouch into the Des Moines have not been explored to any considerable extent.

Collectively, the minerals of this valley, as now known, are extensive and valuable. They constitute one of the many items which render their locality so attractive. It is traversed by one of the most beautiful rivers on earth—400 miles in length, a large portion of it 250 yards in breadth—capable of floating steamers a part of the year, and affording water-power to any desirable extent; with a landscape of great and charming variety—groves, and forests, and prairies, in constant alternation, and possessing a soil scarcely excelled for fertility, perhaps, in the world. Why should it not be thronged with inhabitants? It is the centre of the "Mesopotamia of the West," in a more important sense than that of its position. Let but the iron horse traverse the whole length of the valley, and its silver stream will be skirted with cities and villages in as great continuity as is the Bosphorus; meanwhile, its agricultural, and mineral, and manufactured exports will amount to many *millions of dollars annually*.

Note.—By reference to the chapters on particular counties in this work, it will be seen that discoveries of iron, copper, lead, and coal,

have been made in localities not specified in the foregoing paper. At its last session the legislature passed an act appropriating $2,500 per year, until the work is completed, for a thorough geological survey of the State; the work to be performed by a geologist and a chemist, to be appointed by the governor.

A further reason which we have to urge why this bill should become a law, may be found in the fact of the rapid settlement of this region of country; and if there is a disposition to provide for the growing wants of this region, it should be done at once, and not leave the public domain to be monopolized by remorseless speculators, who have less soul, and exhibit more of the cormorant disposition, than the most powerful railroad monopoly that we can conceive of; and to-day the actual *bona fide* settler can deal with more advantage, pay a less per cent. on deferred payments, and obtain better accommodations with railroad companies, than any land speculator that the government, by delay, fastens upon our Western country. As an evidence of the growth of the West, we beg leave to insert the official census of Iowa, from its first settlement to 1854, by counties, that an idea may be formed of the relative growth of the State, to wit:

CENSUS OF IOWA.

| Counties. | 1836. | 1838. | 1840. | 1844. | 1846. | 1847. | 1849. | 1850. | 1851. | 1852. | 1854. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Adair | | | | | | | | | | | 150 |
| Adams | | | | | | | | | | | 339 |
| Allamakee | | | | | | | 277 | 277 | | 2,000 | 4,230 |
| Appanoose | | | | | 1,300 | 948 | 1,981 | 3,131 | 3,951 | 4,943 | 6,955 |
| Benton | | | | | 207 | 312 | 312 | 673 | 753 | 1,337 | 2,623 |
| Black Hawk | | | | | | | | | | 315 | 2,514 |
| Boone | | | | | | | 419 | 756 | 890 | 1,924 | 1,678 |
| Bremer | | | | | | | | | | 309 | 1,095 |
| Buchanan | | | | | 149 | | 406 | 519 | 1,006 | 1,923 | 2,299 |
| Cass | | | | | | | | | | | 416 |
| Cedar | | 557 | 1,225 | 2,217 | 2,602 | 2,809 | 3,183 | 3,941 | 4,084 | 4,971 | 7,649 |
| Chickasaw | | | | | | | | | | 260 | 288 |
| Clarke | | | | | | | | | | 549 | 1,695 |
| Clayton | | 274 | 1,045 | | | 2,176 | | 3,873 | | 6,318 | 9,377 |
| Clinton | | 445 | 800 | 1,201 | | 1,570 | 2,044 | 2,835 | 3,001 | 3,829 | 7,209 |
| Dallas | | | | | | 164 | 635 | 819 | 925 | 1,215 | 2,202 |
| Davis | | | | | | | 4,939 | 7,204 | 7,454 | 7,502 | 9,767 |
| Decatur | | | | 2,622 | | 4,467 | | 965 | 1,016 | 1,184 | 3,026 |
| Delaware | | | | | | | | 1,739 | | 2,615 | 4,577 |
| Desmoines | | | 171 | | 781 | 1,111 | | 12,914 | 14,498 | 14,573 | 16,799 |
| Dubuque | 6,257 | 4,605 | 5,546 | 9,109 | 9,391 | 10,071 | 11,649 | 10,841 | | 19,500 | 16,662 |
| Fayette | 4,274 | 2,381 | 3,056 | 4,047 | 6,030 | 7,440 | 9,185 | 625 | | 2,665 | 5,043 |
| Fremont | | | | | | | | 1,244 | | 2,946 | 3,606 |
| Guthrie | | | | | | | | | 226 | 300 | 772 |
| Hardin | | | | | | | | | | 300 | 1,259 |
| Harrison | | | | | | | | | | | 1,365 |
| Henry | | 3,058 | 3,784 | 6,017 | 6,875 | 6,759 | 7,399 | 8,707 | 8,915 | 9,633 | 10,139 |
| Iowa | | | | | | 435 | | 625 | | 1,393 | 3,307 |
| Jackson | | 881 | 1,452 | | 4,767 | 4,639 | 5,677 | 7,910 | 7,597 | 8,231 | 12,186 |
| Jasper | | | | | | 500 | 1,223 | 1,398 | 1,402 | 1,678 | 3,466 |
| Jefferson | | | 2,780 | 5,694 | | 8,463 | 8,852 | 9,997 | 10,681 | 10,925 | 11,117 |
| Jones | | 241 | 475 | 1,119 | 1,756 | 1,779 | 2,140 | 3,007 | | 4,201 | 6,073 |
| Johnson | | 237 | 1,504 | 2,949 | | 3,287 | 4,010 | 4,474 | 5,081 | 5,786 | 6,467 |
| Keokuk | | | | | | 2,918 | 3,953 | 4,892 | 5,106 | 5,206 | 7,259 |
| Lee | | 2,839 | 6,096 | 9,830 | 12,160 | 13,931 | | 18,283 | 17,625 | 20,305 | 21,589 |
| Linn | | 905 | 1,385 | 2,643 | 3,111 | 2,954 | 4,769 | 5,444 | 6,189 | 6,990 | 15,893 |
| Louisa | | 1,180 | 1,925 | 3,238 | 3,644 | 3,648 | 4,155 | 5,067 | | 5,276 | 7,241 |
| Lucas | | | | | | | | 471 | 1,025 | 1,446 | 1,301 |
| Madison | | | | | | | 701 | 1,124 | 1,492 | 1,632 | 3,119 |
| Mahaska | | | | | 242 | 3,774 | 5,599 | 5,986 | 6,736 | 7,478 | 8,993 |
| Monona | | | | | | | | | | | 222 |
| Marion | | | | | 160 | 2,350 | 3,797 | 5,419 | 5,869 | 6,998 | 8,215 |
| Marshall | | | | | | | | 236 | 454 | 748 | 1,667 |

*Census of Iowa*—Continued.

| Counties. | 1836. | 1838. | 1840. | 1844. | 1846. | 1847. | 1849. | 1850. | 1851. | 1852. | 1854. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mills | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,463 | 2,171 |
| Monroe | ..... | ..... | ..... | 386 | ..... | 1,222 | ..... | 2,886 | 3,125 | 3,430 | 4,577 |
| Montgomery | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 233 |
| Muscatine | ..... | 1,247 | 1,942 | 2,882 | 1,485 | 3,010 | 4,516 | 5,773 | 6,170 | 6,812 | 9,555 |
| Page | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 551 | 534 | 636 | 1,148 |
| Polk | ..... | ..... | 6,166 | ..... | 1,301 | 1,792 | 4,214 | 4,444 | ..... | 5,939 | 5,368 |
| Pottawatomie | ..... | ..... | ..... | ..... | ..... | ..... | 6,552 | 7,828 | 5,758 | 5,057 | 3,060 |
| Poweshiek | ..... | ..... | ..... | ..... | ..... | ..... | 443 | 615 | 742 | 915 | 1,953 |
| Scott | ..... | 1,252 | 2,193 | 2,750 | ..... | 3,652 | 4,837 | 5,987 | 6,016 | 8,628 | 12,671 |
| Shelby | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 328 |
| Story | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 214 | 836 |
| Tama | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 262 | 1,163 |
| Taylor | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 204 | 393 | 479 | 891 |
| Van Buren | ..... | 3,174 | 6,166 | 9,019 | 9,870 | 10,203 | 11,577 | 12,269 | 13,000 | 12,753 | 13,843 |
| Union | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 80 | 81 |
| Wapello | ..... | ..... | ..... | 2,814 | 422 | 5,660 | 7,255 | 8,473 | ..... | 8,888 | 10,521 |
| Warren | ..... | ..... | ..... | ..... | ..... | ..... | 649 | 943 | 1,193 | 1,488 | 4,446 |
| Washington | ..... | 283 | 1,571 | 3,120 | 3,483 | 3,518 | 4,434 | 4,991 | 5,079 | 5,881 | 7,560 |
| Wayne | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 341 | ..... | 794 | 1,665 |
| Webster | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 336 | 907 |
| Winneshiek | ..... | ..... | ..... | ..... | ..... | 182 | ..... | 546 | ..... | 1,523 | 3,315 |
| Woodbury | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 170 |
| | 10,531 | 22,859 | 43,116 | 71,650 | 78,988 | 116,204 | 130,948 | 192,204 | 157,375 | ..... | 326,014 |

The emigration tending to the West should at once arrest the attention of the philanthropist and statesman. The propriety of dispersing this immense influx of population it seems to us needs no argument or reason. We have the country and the soil for ourselves in abundance, and a surplus for any one disposed to cultivate and develop its richness. The people of this government are inviting them to our midst, and inducements held out to them to come. Let us, therefore, provide the means of locomotion, and transfer them at once from our large cities on the sea-board to our fertile prairies in the West, thereby making them mutually beneficial to the West as cultivators of the soil; to the East, by placing in their laps the wealth of the West, and affording a market for the surplus of the eastern manufactures. We have procured an official statement of this immigration to the port of New York, prepared with great care by John A. Kennedy, esq., the efficient officer in charge of the emigrant landing depot, "Castle Garden," New York.

The following are the tables referred to:

EMIGRANT LANDING DEPOT, CASTLE GARDEN,
*New York, July* 27, 1856.

MY DEAR SIR: Yours of 23d was duly received, and at the earliest possible moment I reply by enclosing you tables embracing all you had before, and a little more. I regret it is out of my power to supply you with a copy of our report at present, but will endeavor to obtain one for you by some means; till when, let what I now send suffice. I give you specifically what you ask for, with the addition of several individual States, &c. The New England States I have clubbed, as well as the fifteen slave States and District of Columbia. The *free* Territories, where passengers were destined, I show you separately, to let you see how few go to them while unorganized. The Territories of

Nebraska, New Mexico and Washington, during the ten months embraced in this report, have not received a single person who landed here with the intention of making a home there. Oregon had *one* person, with $40 in cash, having a destination there.

I do not embrace the persons in the enclosed tables who were destined for Canada and other foreign parts, nor the uncertain.

* * * * * * * * *

Very respectfully, yours,

JOHN A. KENNEDY.

Hon. JAMES THORINGTON.

I have not yet got the month of June perfect; as soon as done, you shall have it. The tables are only intended to show ten months.

J. A. K.

| Date. | Six New England States. | | Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Texas, Arkansas, Mississippi, Tennessee, Kentucky, Missouri, and District of Columbia. | | New York. | |
|---|---|---|---|---|---|---|
| | Passengers. | Cash means. | Passengers. | Cash means. | Passengers. | Cash means. |
| 1855. | | | | | | |
| August | 568 | $14,938 28 | 175 | $18,449 87 | 3,415 | $152,337 46 |
| September | 957 | 16,848 53 | 446 | 20,531 62 | 4,379 | 147,878 26 |
| October | 1,069 | 12,404 48 | 548 | 17,594 58 | 4,768 | 116,820 76 |
| November | 381 | 4,084 64 | 268 | 7,659 03 | 2,870 | 93,792 34 |
| December | 824 | 9,577 12 | 440 | 14,967 12 | 4,057 | 100,318 40 |
| 1856. | | | | | | |
| January | 113 | 3,028 25 | 38 | 633 75 | 506 | 10,979 62 |
| February | 131 | 1,829 19 | 96 | 1,889 30 | 683 | 22,933 30 |
| March | 473 | 6,122 60 | 184 | 9,007 12 | 2,396 | 69,142 09 |
| April | 405 | 24,209 55 | 126 | 11,114 25 | 2,788 | 125,877 65 |
| May | 1,813 | 18,601 89 | 456 | 53,630 85 | 7,435 | 288,858 50 |
| Total | 6,734 | 111,644 53 | 2,777 | 155,477 49 | 33,297 | 1,128,938 38 |

TABLES—Continued.

| Date. | New Jersey. | | California. | | Kansas. | |
|---|---|---|---|---|---|---|
| | Passengers. | Cash means. | Passengers. | Cash means. | Passengers. | Cash means. |
| 1855. | | | | | | |
| August | 143 | $1,715 90 | 28 | $5,076 38 | ------ | ------ |
| September | 320 | 7,049 15 | 100 | 14,856 00 | ------ | ------ |
| October | 360 | 6,852 79 | 137 | 34,300 00 | 1 | $40 00 |
| November | 148 | 3,019 37 | 64 | 8,843 00 | ------ | ------ |
| December | 219 | 5,720 19 | 118 | 17,827 50 | ------ | ------ |
| 1856. | | | | | | |
| January | 18 | 133 00 | 18 | 5,992 00 | ------ | ------ |
| February | 52 | 1,714 50 | 15 | 11,708 00 | 1 | 18 00 |
| March | 140 | 1,226 03 | 109 | 27,225 00 | ------ | ------ |
| April | 147 | 2,854 55 | 74 | 18,129 00 | ------ | ------ |
| May | 386 | 180,499 37 | 67 | 8,793 25 | 1 | 70 00 |
| Total | 1,933 | 210,784 85 | 730 | 152,750 13 | 3 | 128 00 |

| Date. | Utah. | | Iowa. | | Wisconsin. | |
|---|---|---|---|---|---|---|
| | Passengers. | Cash means. | Passengers. | Cash means. | Passengers. | Cash means. |
| 1855. | | | | | | |
| August | ------ | ------ | 93 | $7,753 00 | 783 | $94,090 31 |
| September | 4 | $2 50 | 170 | 15,519 28 | 1,295 | 85,377 28 |
| October | ------ | ------ | 227 | 10,101 25 | 1,398 | 97,150 37 |
| November | ------ | ------ | 147 | 17,038 00 | 482 | 36,120 71 |
| December | 246 | 24,642 05 | 158 | 7,855 62 | 709 | 33,246 61 |
| 1856. | | | | | | |
| January | ------ | ------ | 4 | 263 50 | 35 | 974 00 |
| February | 416 | 23,891 75 | 4 | 29 00 | 63 | 1,823 00 |
| March | 454 | 4,288 00 | 53 | 2,646 25 | 255 | 27,606 56 |
| April | ------ | ------ | 117 | 24,776 00 | 842 | 175,750 64 |
| May | ------ | ------ | 495 | 128,391 00 | 1,753 | 277,080 40 |
| Total | 1,120 | 52,824 30 | 1,468 | 214,372 90 | 7,615 | 829,219 88 |

TABLES—Continued.

| Date. | Michigan. | | Minnesota. | | Illinois. | |
|---|---|---|---|---|---|---|
| | Passengers. | Cash means. | Passengers. | Cash means. | Passengers. | Cash means. |
| 1855. | | | | | | |
| August | 259 | $12,280 45 | 10 | $300 00 | 469 | $23,748 00 |
| September | 430 | 16,318 91 | 33 | 1,326 00 | 644 | 38,895 80 |
| October | 489 | 19,472 25 | 45 | 1,636 00 | 1,349 | 80,199 95 |
| November | 151 | 10,073 82 | 14 | 3,440 00 | 340 | 16,403 53 |
| December | 299 | 14,983 80 | 25 | 1,210 00 | 642 | 28,794 56 |
| 1856. | | | | | | |
| January | 30 | 3,278 00 | ..... | ..... | 28 | 729 00 |
| February | 33 | 1,721 00 | 11 | 2,000 00 | 88 | 2,163 56 |
| March | 78 | 2,821 63 | 5 | 721 00 | 346 | 22,486 75 |
| April | 90 | 14,480 25 | 28 | 1,766 00 | 480 | 48,329 00 |
| May | 547 | 83,603 75 | 86 | 6,778 00 | 1,853 | 330,301 61 |
| Total | 2,406 | 179,033 86 | 257 | 19,177 00 | 6,132 | 592,064 56 |

| Date. | Ohio. | | Indiana. | | Pennsylvania. | |
|---|---|---|---|---|---|---|
| | Passengers. | Cash means. | Passengers. | Cash means. | Passengers. | Cash means. |
| 1855. | | | | | | |
| August | 390 | $13,549 35 | 162 | $15,949 22 | 612 | $165,259 43 |
| September | 830 | 38,554 59 | 226 | 9,448 65 | 1,189 | 29,864 52 |
| October | 952 | 52,663 93 | 286 | 21,247 60 | 1,312 | 36,514 04 |
| November | 368 | 25,932 62 | 69 | 3,659 00 | 535 | 5,258 73 |
| December | 710 | 29,830 06 | 138 | 5,812 25 | 1,941 | 45,171 50 |
| 1856. | | | | | | |
| January | 33 | 711 50 | 13 | 1,204 25 | 155 | 7,807 66 |
| February | 75 | 4,606 50 | 4 | 22 50 | 185 | 3,295 71 |
| March | 258 | 15,519 50 | 38 | 1,487 00 | 358 | 12,018 78 |
| April | 377 | 17,267 13 | 68 | 1,742 00 | 798 | 25,314 54 |
| May | 1,140 | 242,528 84 | 165 | 31,610 60 | 1,574 | 163,371 28 |
| Total | 5,133 | 441,164 02 | 1,169 | 92,183 07 | 7,919 | 493,876 17 |

EMIGRANT LANDING DEPOT, CASTLE GARDEN,
*New York, July* 31, 1856.

DEAR SIR: Enclosed you have the arrivals of June for the places indicated, as I promised in mine of a few days since.

I have not yet been able to procure you a copy of our five-months

report, but am promised one for you, which will be sent on immediately on its receipt.

Respectfully yours,

J. A. KENNEDY.

Hon. JAMES THORINGTON.

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*Return of arrivals at Castle Garden, from June 1, 1856, to June 30, 1856, inclusive.*

| | Passengers. | Cash means. | Total for eleven months. | |
|---|---|---|---|---|
| | | | Passengers. | Cash means. |
| Six New England States | 1,400 | $9,878 48 | 8,134 | $121,523 01 |
| Fifteen slave States, and District of Columbia | 479 | 39,411 24 | 3,256 | 194,888 73 |
| New York | 6,646 | 162,687 71 | 39,943 | 1,291,626 09 |
| New Jersey | 339 | 4,170 94 | 2,272 | 214,955 79 |
| Pennsylvania | 1,502 | 46,157 61 | 9,421 | 546,033 78 |
| Ohio | 984 | 38,469 88 | 6,117 | 479,633 90 |
| Indiana | 140 | 9,678 56 | 1,309 | 101,861 63 |
| Illinois | 1,581 | 106,391 75 | 7,713 | 698,456 31 |
| Michigan | 481 | 20,267 00 | 2,887 | 199,300 86 |
| Wisconsin | 2,842 | 216,441 50 | 10,457 | 1,045,661 38 |
| Iowa | 387 | 33,962 50 | 1,855 | 248,335 40 |
| California | 76 | 12,375 00 | 806 | 165,125 13 |
| Minnesota | 48 | 15,979 00 | 305 | 35,156 00 |
| Kansas | | | 3 | 128 00 |
| Nebraska | | | | |
| Utah | 709 | 3,856 63 | 1,829 | 55,670 93 |
| Oregon | | | 1 | 10 00 |
| Washington | | | | |
| New Mexico | | | | |

Thus it will be seen that it is not the paupers, felons, and lazaroni of Europe that find their way to "our homes in the Great West," where the chief of the Ioway tribe of Indians, on the west bank of the Mississippi river, addressed himself to the Great Manitou in his native language, "*Iowah*"—"Here we rest;" which, though literally too true as to many of them, was designed to convey the idea that he had found the promised land, and that they need go no further. In this vast region of country, Congress should at once meet the demand made upon them by this great influx of population from foreign countries, and remove them at once from the great temptations that surround them in our large cities. As an evidence of the propriety and justice of any grant of lands made to the States or Territories to aid in the construction of railroads, we beg leave to submit the following statement of facts, to wit:

[From the Evening Post.]

"WHAT RAILROADS ARE DOING FOR THE WEST.

"The official returns of the new census of Illinois have just been received. The entire population is over 1,300,000, which is a gain of about 50 per cent. upon the census of 1850. By comparing the increase through the several decades and semi-decades since the census has been taken, it will be seen that the gain has been much larger during the last five years than in any former period.

| | |
|---|---|
| "From 1810 to 1820 the increase was | 42,923 |
| 1820 to 1830 .....do | 102,234 |
| 1830 to 1835 .....do | 114,982 |
| 1835 to 1840 .....do | 204,756 |
| 1840 to 1845 .....do | 185,942 |
| 1845 to 1850 .....do | 189,345 |
| 1850 to 1855 .....do | 448,781 |

"The railroad system has been developed in Illinois within the last five years, and one of the fruits we see has been to double the population. A correspondent showed the other day that another was to quintuple the value of her land. Add to these the improved society, the multiplied educational and moral influences, such as the newspapers, cheap books, &c., which follow population, and take advantage of all cheap methods of communication, and then one may begin to appreciate the advantages of the modern railway system as an engine of civilization."

Why the roads in this bill should be favored by the general government, we will quote from the able address of General John A. Dix, president of the Mississippi and Missouri Railroad, delivered at Iowa City on the 3d of January, 1856, on the completion of said road to that point, to wit: In commenting upon this great thoroughfare across this continent, the General remarks:

"Iowa presents great advantages for the continuation of this line. It is a rolling prairie of uncommon fertility, without a serious obstruction from the Mississippi to the Missouri. In ascending from the former at Davenport to the general plane of elevation, (180 feet in 3 miles,) we have already overcome one of the greatest obstacles between Rock Island and Council Bluffs. The country for the first thirty miles in Nebraska, which our engineers have explored, is much the same—easily crossed by a railroad, and capable of producing abundantly; and all the examinations show that the valley of the Platte river for hundreds of miles, almost to the base of the Rocky mountains, is highly favorable for a continuation of the road. You are all aware that five routes to the Pacific have been surveyed under the direction of the War Department. The route west from St. Louis, near the 38th and 39th parallels of latitude, and the route near the 35th, are virtually disposed of, either as impracticable or too costly. The route near the 47th and 49th parallels, along our northern frontier, is not only open to the objection of expensiveness, but it is too remote

from the centre of our territory and population. The last objection applies to the route near the 32d parallel, though it is believed to be the least expensive one of all. From the surveys, the choice would seem to be between the latter and the route near the 41st and 42d parallels, west from Council Bluffs; and if on this the great elevation of a portion of the line exposes it to temporary interruptions in winter, on the other the torrid climate of the Colorado desert renders it necessary to suspend labor in the open air for several months in the year. Under these circumstances, it appears to me that it requires no powers of prophecy to foretell the result. Missouri, and our friends north in Dubuque and in Minnesota, must unite their improvements with ours at some point east of the Rocky mountains, and go with us to the Pacific on a great central route, with several terminations on the Mississippi; and, with those termini from St. Louis to St. Paul, nearly all the States in the Union will be conveniently connected with the great commercial centres of the Atlantic and Pacific coasts. The Secretary of War states that the difficulties of the line from Council Bluffs to San Francisco are already known to be less than on any other route except that of the 32d parallel; and he states further, that, after his report to Congress was made, the discovery of a still more direct route from Great Salt Lake to San Francisco, practicable throughout for wagons, was announced by the officer commanding the troops in Utah—a route which, if found practicable for a railroad, will not only lessen the length of this line, but further diminish its difficulties.

"I have condensed, from the Secretary's report, a table showing the relative lengths, cost, &c., of the two last mentioned lines, and will read it to you in illustration of some of their comparative advantages and disadvantages:

*Table showing the lengths, sums of ascents and descents, equated lengths, cost, &c., of the several routes explored for a railroad to the Pacific.—Page 107, vol. 1, Explorations, &c.*

| ROUTES. | Distance in straight line. | Distance by proposed railroad route. | Sum of ascents and descents. | Length of level route of equal working expense. | Comparative cost of different routes. | No. of miles of route through lands generally uncultivable, arable soil being found in small areas. | No. of square miles of sums of areas of largest bodies of arable in cultivable regions. | No. of miles of route through arable land. | No. of miles at an elevation above 100, and less than 1,000 feet. | No. of miles at an elevation greater than 1,000, and less than 2,000 feet. | 2,000 and 3,000. | 3,000 and 4,000. | 4,000 and 5,000. | 5,000 and 6,000. | 6,000 and 7,000. | 7,000 and 8,000. | 8,000 and 9,000. | Summit of the highest pass on the route. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From Council Bluffs to Benicia, near 41st and 42d parallels of latitude..... | 1,410 | 2,032 | 29,120 | 2,583 | $116,095,000 | 632 | [a]1,100 | 1,400 | 180 | 170 | 210 | 160 | 580 | 285 | 270 | 107 | 20 | 8,373 |
| From Fulton to San Francisco, near 32d parallel..... | 1,620 | 2,039 | 42,008 | 2,834 | 93,120,000 | 759 | 2,300 | 1,280 | 700 | 410 | 160 | 205 | 504 | 60 | ..... | ..... | ..... | 5,717 |

[a] These sums do not include the areas of cultivable soil as far west as the Cascade and Sierra Nevada mountains.

[NOTE.—The route from Council Bluffs, it is seen, is estimated to cost $23,000,000 more than the other, and has its summit 2,655 feet higher. On the other hand, the route from Fulton has a sum of ascents and descents exceeding the other by 12,888 feet, a great disadvantage in the working portion of the road. The cost of the former may be reduced by the more direct line from Great Salt Lake.]

The use of coal as fuel on our western roads having been properly tested, we deem it advisable to submit the result of an impartial trial on the Illinois Central railroad, to wit:

*Interesting experiments on the Illinois Central railroad.*

ILL. C. R. R. Co., DIVISION SUPERINTENDENT'S OFFICE,
AMBOY, *July* 24, 1856.

DEAR SIR: In accordance with the plans heretofore arranged and determined on in our conference on the subject, I have caused engine No. 51 to be fitted up with suitable grates and drop-door for burning coal. The work was completed at a cost of $345 20, and on the 16th of June, ultimo, the machine was put to work.

I now make the following report of the facts in regard to the use of the engine since that time:

No. 51 completed its twenty-first trip last night, and has run 2,310 miles, doing regular freight-train service between Wapella and Amboy. The results are highly gratifying, and it is a fixed fact, that all wood-burning engines can be converted into coal-burners at an expense not exceeding $275 each. I have caused the fire-box, flue-sheets, and flues, to be thoroughly examined every trip, both at Wapella and Amboy, in order to detect any defect or injury which might result, and up to last night we have not discovered the slightest. The fire-box, flue-sheets, and flues, are as free from scales and expansion as on the day the coal was put in the furnace. The flues have not leaked a drop; the engine has not lost a trip, nor has it ever failed for steam on any part of the road, although on six trips the run from Wapella to Amboy was made without shaking the grate bars. It is a strong piece of evidence in favor of the success of the use of Illinois coal in locomotive engines, that the grates have not sprung or warped in the least, and are to-day as stright and clear as if new.

Here are the performances of several engines of the same class as the coal-burner, doing the same work with wood on alternate days.

The figures are taken from the monthly report of fuel consumed by engines on this division, the cost of wood being estimated at $4 35 per cord, and coal at $3 per ton:

| | | Miles run. | Cords of wood. | | Cost. |
|---|---|---|---|---|---|
| Wood engine | No. 57 | 1,320 | 49½ | | $215 32 |
| " | " 39 | 1,526 | 65¾ | | 286 01 |
| " | " 54 | 1,803 | 52⅞ | | 228 37 |
| " | " 70 | 1,968 | 80 | | 348 00 |
| " | " 65 | 2,062 | 89½ | | 389 32 |
| Coal | " 51 | 2,082 | 38½ tons, | | 115 50 |

These engines are engaged on freight-train service between Amboy and Wapella, except No. 54, which is ditching, and Nos. 65 and 70, which run freights between Dunleith and Amboy.

The loads drawn by these engines have averaged fifteen loaded eight-wheeled cars, or a tonnage on each train of 300,000 lbs. each; and the cost of fuel per mile run has been as follows:

| | Miles run. | Cords of wood. | Cost per mile. |
|---|---|---|---|
| No. 57 | 1,320 | 40 | 16.3 |
| 39 | 1,526 | 68 | 18.7 |
| 54 | 1,803 | 52 | 12.6 |
| 70 | 1,968 | 56 | 17.6 |
| 65 | 2,052 | 59 | 13.8 |
| 51 | 2,082 | 59 | 5.5 |

| | | |
|---|---|---|
| | | tons of coal |

From these figures I institute the following comparisons, showing the saving to be made in the use of coal:

| | Miles run. | Cost. |
|---|---|---|
| No. 57 | 1,320 | $215 52 |
| 51 | 1,320 | 72 60 |
| Saving in favor of coal | | $142 72 |

| | Miles run. | Cost. |
|---|---|---|
| No. 39 | 1,526 | $286 01 |
| 51 | 1,526 | 83 93 |
| Saving in favor of coal | | $202 08 |

The coal used in No. 51 is from the upper vein of the Lasalle mines, which seems to answer as well as that of the lower veins for locomotives, though the lower for other purposes is esteemed best.

The amount of cinders and dust found in the fire-box after a trip of 110 miles is small, averaging say two bushels, from 51½ bushels of coal, the average of coal used per trip.

In conclusion, I submit the above to your consideration, confident I shall be able to make a large reduction in the cost of fuel on my division the coming year.

I am, very respectfully,

JAMES C. CLARKE,
*Division Superintendent Illinois C. R. R.*

JOHN H. DONE, Esq.,
*General Superintendent.*

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We conclude this report by giving a reliable article on the earnings of some of the western railroads. This information can be relied upon, and we deem it advisable to insert the same here to counteract the impression that was attempted to be made upon the members of Congress, that western roads were unproductive, and would not repay the capitalist for the means invested.

### EARNINGS OF WESTERN RAILROADS.

We are permitted to copy the following interesting letter, written by a gentleman in this city to his correspondent in New York. We published a letter on the subject of western railroad earnings a few days ago, and this is from the same pen. No one is better qualified to discuss the subject:

CHICAGO, *July* 24, 1856.

DEAR SIR: I beg to own your favor of the 22d instant, and to your inquiry, "What have you to say to the statements in slip herewith enclosed," I reply as follows: "The only just method of ascertaining the relative earnings of railroads is to measure them severally by their receipts per mile per annum, or per month, and I have applied this rule below, taking the figures, *without vouching for their accuracy*, from the *Times* slip sent me.

The number of miles run by the Galena and Chicago Union railroad in June, 1855, were:

| | |
|---|---|
| Main line—Chicago to Freeport | 121 |
| Dixon air-line—junction to Dixon | 68 |
| Beloit branch—Belvidere to Beloit | 22 |
| In all | 211 |

Earnings in June, 1855, were $226,100, or $107,151 per mile per month.

Miles run by same road in June, 1856, were:

| | |
|---|---|
| Main line—Chicago to Freeport | 121 |
| Dixon air-line—junction to Fulton | 106 |
| Beloit branch—Belvidere to Beloit | 22 |
| In all | 249 |

Earnings in June, 1856, $213,500, or $857 43 per mile per month.

Decrease in 1856, $614 08 per mile per month.

The number of miles run by the Chicago and Burlington railroad line in June, 1855, were:

| | |
|---|---|
| Main line—Chicago to Burlington | 210 |

Earnings in June, 1855, were $154,377; or, say $734 13 per mile per month.

Miles run by same road in June, 1856, were:

| | |
|---|---|
| Main line—Chicago to Burlington | 210 |
| Northern Cross railroad—Galesburg to Quincy | 100 |
| In all | 310 |

Earnings in June, 1856, were $164,578; or $530 89 per mile per month.

Decrease in June, 1856, was $204 24 per mile per month.

The number of miles run by the Chicago and Rock Island railroad in June, 1855, were:

| | |
|---|---|
| Main line—Chicago and Rock Island | 181½ |
| Bureau Valley—junction to Peoria | 37½ |
| In all | 219 |

Earnings in June, 1855, $123,313, or $562 62 per mile per month.

Same road run same number of miles in June, 1856, and earned $142,063, or say $648 68 per mile per month.

Increase in June, 1856, $86 06 per mile per month.

It will be seen that the falling off in prices of grain affected the Burlington road as well as the Galena; and no doubt the increase per mile of the Rock Island road would have been double what it was had the prices of grain held up to the rates of 1855. It should be borne in mind, too, that the Rock Island road had the great advantage of sixty-seven miles of road in Iowa, acting as a feeder in 1856, which it had not in 1855, and that neither the Burlington nor Galena had any similar advantage in 1856 that they had not in 1855.

I have obtained the following figures of the earnings of the Illinois Central Railroad in June, 1855 and 1856, to carry the comparison a step further.

The Illinois Central Railroad ran in June, 1855, as follows:

| | |
|---|---|
| Main line, Cairo to Lasalle | 308 |
| Galena branch, Lasalle to Galena | 117 |
| Chicago branch, Chicago to Urbana | 130 |
| In all | 555 |

Earnings in June, 1855, $123,421, or say $222 38 per mile per month.

Miles run by the same road in June, 1856, were as follows:

| | |
|---|---|
| Main line and Galena branch | 454 |
| Chicago branch, Chicago to Matteo | 173 |
| In all | 627 |

Earnings in June, 1856, were $194,695, or $310 51 per mile per month.

Increase in June, 1856, $188 12 per mile per month.

These facts furnish abundant material for comparisons, which I leave to those who choose to make them. They show already, however, that the Galena and Chicago Union Railroad is entitled to the position of a first-class east and west pioneer railroad route, of which the Michigan Central, Southern Michigan, the Great Western of Canada, the roads along the south shore of Lake Erie, and the New York and Erie and the New York Central are conspicuous examples; and to which may justly be added the Chicago and Rock Island, and the Chicago, Quincy and Burlington lines. These roads, including the G. & C. U. R. R., were first needed along and through the country they traverse, were first built, always have been first in business and income, and will hold that position as long as commerce and emigration pursue their present course between the east and west.

Of the roads whose earnings per mile per month are given above, each has a prosperous future, and the share and bondholders may con-

fidently look forward to the time when the earnings of each per mile per month will approach the best present annual average of the G. & C. U. R. R. Would you not, and your friends in the same boat, be satisfied with such a result? I have no doubt of it.

Yours truly.